

In the Claims:

Please amend the claims as follows.

1. (Currently Amended) A method for producing canthaxanthin, comprising the steps of:

inducing a mutation in a parent astaxanthin-producing micro-organism strain, wherein the DNA sequence that corresponds to the micro-organism's 16S ribosomal RNA has homology of 98% or higher with the sequence shown in SEQ ID NO:1;

selecting a mutant that produces a higher mass percentage of canthaxanthin relative to that produced by the parent strain of the micro-organism; and

recovering canthaxanthin or a carotenoid mixture comprising canthaxanthin from a culture product of the selected mutant micro-organism; wherein the mass percentage of canthaxanthin produced is at least 40% by mass relative to the total amount of carotenoid produced.

2. (Canceled)

3. (Previously Presented) The method of claim 1, wherein each of the ratios of  $\beta$ -cryptoxanthin, zeaxanthin, 3-hydroxyechinenone, asteroidenone, adonirubin, adonixanthin, and astaxanthin produced from the selected mutant micro-organism is less than 20% by mass relative to the total amount of carotenoid produced.

4. (Previously Presented) The method of claim 1, wherein the astaxanthin-producing micro-organism is selected from the group consisting of: E-396 strain known as FERM BP-4283; a mutant of the E-396 strain known as FERM BP-4283; the A-581-1 strain known as FERM BP-4671; and a mutant of the A-581-1 strain known as FERM BP-4671.

5. (Currently Amended) The method of claim 2 1, wherein the astaxanthin-producing micro-organism is selected from the group consisting of: the E-396 strain known as FERM BP-4283; a mutant of the E-396 strain known as FERM BP-4283; the

A-581-1 strain known as FERM BP-4671; and a mutant of the A-581-1 strain known as FERM BP-4671.

6. (Previously Presented) The method of claim 3, wherein the astaxanthin-producing micro-organism is selected from the group consisting of: the E-396 strain known as FERM BP-4283; a mutant of the E-396 strain known as FERM BP-4283; the A-581-1 strain known as FERM BP-4671; and a mutant of the A-581-1 strain known as FERM BP-4671.